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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HOLLIDAY, JAIME MICHELE	
ART UNIT	**PAPER NUMBER**
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/521,536	AGHVAMI ET AL.	
	Examiner	Art Unit	
	Jaime M. Holliday	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) *47 and 48* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-16,21-29,31-36 and 41-46* is/are rejected.

7)☐ Claim(s) *10,17-20,30 and 37-40* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 2, 2008 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-46 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

Claims 43-45 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 43-45 are directed to computer programs that are not embodied on any elements such as computer readable media.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 12-14, 21, 32-34, 46** are rejected under 35 U.S.C. 102(b) as being anticipated by **Reemtsma (Pub # U.S. 2002/0009998 A1)**.

Consider **claims 1, 21 and 46**, Reemtsma shows and discloses a mobile radio communications network has a hierarchical radio cell structure with small radio cells and with at least one larger radio cell superposed on the small radio cells. In order to render possible real-time radio transmission, particularly real-time data transmission, in a mobile radio communications network with a hierarchical radio cell structure and to improve the transmission quality, it is proposed to execute a real-time radio transmission via the at least one superposed larger radio cell. A non-real-time data transmission is preferably executed via a smaller radio cell (abstract). In a mobile radio communications network wherein transmission power for radio transmission between a terminal **4** and a base station **5** can be varied in order to permit attainment of a determinate transmission quality. If a user terminal transmits with a high transmission power or prompts a base station to transmit with a high transmission power, the terminal may cause interference to one or more other terminals. To minimize this interfering signal, radio transmission is interrupted until a measured interfering

signal is below a predefinable interference threshold. The method is applied particularly in the case of non-real-time data transmissions, and is particularly suitable for mobile radio communications networks which transmit data according to the Code Division Multiple Access (CDMA) method, reading on the claimed "method of operating a CDMA cellular communications system on substantially a same frequency band comprising at least one macro cell including a macro cell base station and at least one micro cell including a micro cell base station, the at least one micro cell being located at least in part within an area served by the at least one macro cell base station, comprises the steps of providing at said micro cell base station non-real time data services when permitted by a dynamic interference level from the perspective of said micro cell, which dynamic interference is caused by said macro cell base station," (paragraph 48). As soon as the MAC layer of device **6**a data package for transmission, a query of the MAC layer checks the status of an interfering signal. If the status is "critical", i.e., if the interfering signal exceeds the predefined interference threshold, the data transmission is interrupted. The interfering signal is thus measured periodically and the data transmission resumed if the interference falls below the predefinable interference threshold. The data transmission is resumed as soon as the status of the interfering signal changes to "non-critical", reading on the claimed "receiving an electronic indication representative of the quality of service at one or more cellular communications device served by the macro cell base station; electronically processing the or each electronic indication to obtain a

comparison with a predetermined threshold for said quality of service; and maintaining said quality of service above said predetermined threshold for any cellular communications device(s) served by the at least one macro cell base station that is within a predetermined range of the micro cell base station by limiting the power of signals transmitted from the at least one micro cell base station," (paragraphs 49, 50).

Consider **claims 12 and 32**, and **as applied to claims 1 and 21 above**, respectively, Reemtsma further discloses that if a user terminal transmits with a high transmission power or prompts a base station to transmit with a high transmission power, the terminal may cause interference to one or more other terminals. To minimize this interfering signal, radio transmission is interrupted until a measured interfering signal is below a predefinable interference threshold, reading on the claimed "substantially ceasing transmission of signals from said micro cell base station to cellular communications device(s) served thereby in order to substantially maintain the quality of service of cellular communications devices served by the macro cell base station that are within said predetermined range," (paragraph 48).

Consider **claims 13 and 33**, and **as applied to claims 1 and 32 above**, respectively, Reemtsma further discloses that the mobile radio communications network has means for the selection of a radio cell for the purpose of setting up a radio transmission connection or for the purpose of passing on a radio transmission connection from another radio cell (handover), reading on the

claimed "electronically instructing said micro cell base station to take over service of the or each cellular communications device within said predetermined range, enabling resumption or continuation of transmission and reception of signals to and from cellular communications devices served by the micro cell base station and/or macro cell base station," (abstract and paragraph 19).

Consider **claims 14 and 34**, and **as applied to claims 1 and 32 above**, respectively, Reemtsma further discloses that the data transmission is preferably interrupted only in the case of those non-real-time data transmissions whose mean transmission power is above a predefinable power threshold, reading on the claimed "prioritizing service from said micro cell base station to cellular communications devices requiring substantially real-time data above those requiring substantially non-real-time data," (paragraph 18).

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claims 1, 2, 4, 5, 7-8, 22-25, 27-28 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Reemtsma (Pub # U.S. 2002/0009998 A1)** in view of **Wheatley, III et al. (U.S. Patent # 6,381,230 B1)**.

Consider **claims 2 and 22**, and **as applied to claims 1 and 21 above**, respectively, Reemtsma clearly shows and discloses the claimed invention except determining those devices in a predetermined range based on electronic processing.

In the same field of endeavor, Wheatley, III et al. clearly show and disclose a method for providing personal base station, reading on the claimed micro cell base station," communications within a "cell" of a cellular base station, reading on the claimed "macro cell base station," (col. 2 lines 38-40). In **Fig. 1**, line **102** represents the power received at a subscriber station from a macro base station as a function of the distance from the macro base station. Line **104** represents the power received at the subscriber station from the personal base station as a function of the distance from the micro base station. Therefore, as a subscriber communicating with the macro base station moves away from the macro base station and towards the micro base station, the power received from the micro base station will increase. The power received from the micro base station represents interference to the subscriber station communicating with the

macro base station, reading on the claimed "cellular communications device(s) within said predetermined range can be determined by electronically processing signals representative of macro cell interference and micro cell interference at each cellular communications device, the predetermined range being that distance at which micro cell interference is negligible in comparison with macro cell interference," (col. 5 lines 47-57, 65-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use power that represents interference as taught by Wheatley, III et al. in the method of Reemtsma, in order to determine movement or location of a subscriber.

Consider **claims 4 and 24**, and **as applied to claims 1 and 21 above**, respectively, Reemtsma clearly shows and discloses the claimed invention except determining those devices in a predetermined range based on electronic processing.

In the same field of endeavor, Wheatley, III et al. clearly show and disclose a method for providing personal base station, reading on the claimed micro cell base station," communications within a "cell" of a cellular base station, reading on the claimed "macro cell base station," (col. 2 lines 38-40). In **Fig. 1**, line **102** represents the power received at a subscriber station from a macro base station as a function of the distance from the macro base station. Line **104** represents the power received at the subscriber station from the personal base station as a function of the distance from the micro base station. Therefore, as a

subscriber communicating with the macro base station moves away from the macro base station and towards the micro base station, the power received from the micro base station will increase. The power received from the micro base station represents interference to the subscriber station communicating with the macro base station, reading on the claimed "generating an electronic signal representative of said predetermined range, receiving respective electronic signals representative of the distance between said micro cell base station and the or each cellular communications device served by the macro cell, and processing said electronic signals so as to determine those cellular communications devices served by the macro cell that are within said predetermined range" (col. 5 lines 47-57, 65-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use power as a function of distance as taught by Wheatley, III et al. in the method of Reemtsma, in order to determine movement or location of a subscriber.

Consider **claims 5 and 25**, Reemtsma, as modified by Wheatley, III et al., clearly shows and discloses the claimed invention **as applied to claims 4 and 24 above**, respectively, and in addition, Wheatley, III et al. further disclose that as a subscriber communicating with the macro base station moves away from the macro base station and towards the micro base station, the power received from the micro base station will increase. Therefore, the location of the subscriber may be determined using power received, reading on the claimed

"electronic signals representative of the distance between said micro cell base station and the or each cellular communications device are obtained by the steps of determining respective estimated geographic position of the or each cellular communications device and processing said estimated geographic position to determine a distance between said micro cell base station and the or each cellular communication device," (col. 5 lines 54-57).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use power as taught by Wheatley, III et al. in the method of Reemtsma, in order to determine movement or location of a subscriber.

Consider **claims 7 and 27**, and **as applied to claims 1 and 21 above**, respectively, Reemtsma clearly shows and discloses the claimed invention except instructing the micro base station to transmit below a threshold.

In the same field of endeavor, Wheatley, III et al. clearly show and disclose a method for providing personal base station, reading on the claimed micro cell base station," communications within a "cell" of a cellular base station, reading on the claimed "macro cell base station," (col. 2 lines 38-40). A power level measurer in the micro base station measures a power level of the delayed received first forward link data signal and a gain adjuster adjusts the power level of the delayed received first forward link data signal in response to the power level measurement in order to scale the first forward link data signal with respect to the second forward link data signal. This scaling is performed in order to

ensure sufficient energy of the retransmitted macro base station forward link data at a first subscriber station, reading on the claimed "electronically determining a tolerable micro cell base station power level for the or each cellular communications device served by the macro cell base station and instructing said micro cell base station to transmit all signals at a power substantially no higher than said tolerable level," (col. 3 lines 37-49).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine power as taught by Wheatley, III et al. in the method of Reemtsma, in order to control interference.

Consider **claims 8 and 28**, Reemtsma, as modified by Wheatley, III et al., clearly shows and discloses the claimed invention **as applied to claims 7 and 27 above**, respectively, and in addition, Wheatley, III et al. further disclose that the base station informs a second subscriber station of the maximum power that the second subscriber station using the micro base station is allowed to transmit. The second subscriber station is not allowed to exceed this power while communicating with the micro base station, reading on the claimed "electronically determining a tolerable micro cell base station power level for all cellular communications devices served by the macro cell base station within said predetermined range, and electronically instructing said micro cell base station to transmit signals at a power substantially no higher than the lowest tolerable micro cell base station power that has been determined for said cellular communications devices," (col. 4 lines 3-8).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine power as taught by Wheatley, III et al. in the combination of Asanuma and Rappaport et al., in order to control interference.

Consider **claim 23**, and **as applied to claim 22 above**, Reemtsma, as modified by Wheatley, III et al., clearly shows and discloses the claimed invention except that the interference of the micro cell is 10dB less than the interference of the macro cell. However, it is known in the art that since the micro cell is smaller and transmits less power than the macro cell, its interference will inherently be less than that of the macro cell, reading on the claimed "predetermined range is that distance from the micro cell base station at which micro cell interference is at least approximately l0dB less than macro cell interference."

Consider **claim 41**, the combination of Asanuma and Rappaport et al., as modified by Wheatley et al., clearly shows and discloses a overlay cell type mobile communication system for performing radio communications by forming and laying a macro cell with base stations of a macro cell system and a plurality of micro cells with base stations of a micro cell system on each other and permitting the macro cell system and the micro cell system to commonly use part or all of a plurality of carrier frequencies. The base station includes a controller that has a microcomputer, reading on the claimed "base station controller comprising a computer operable controller as claimed in **claim 21**," (fig. 10 and col. 1 lines 5-10, col. 7 line 26).

8. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Reemtsma (Pub # U.S. 2002/0009998 A1)**.

Consider **claim 3**, and **as applied to claim 1 above**, Reemtsma clearly shows and discloses the claimed invention except that the interference of the micro cell is 10dB less than the interference of the macro cell. However, it is known in the art that since the micro cell is smaller and transmits less power than the macro cell, its interference will inherently be less than that of the macro cell, reading on the claimed "predetermined range is that distance from the micro cell base station at which micro cell interference is at least approximately l0dB less than macro cell interference."

9. **Claims 6 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Reemtsma (Pub # U.S. 2002/0009998 A1)** in view of **Wheatley, III et al. (U.S. Patent # 6,381,230 B1)**and in further view of **Innes et al. (U.S. Patent # 6,061,565)**.

Consider **claims 6 and 26**, and **as applied to claims 5 and 25 above**, respectively, Reemtsma, as modified by Wheatley, III et al. clearly shows and discloses the claimed invention except that the location of the subscriber is obtained using radio location technology.

In the same field of endeavor, Innes et al. clearly show and disclose that in GSM systems there are macro cells and micro cells, and it is known to hand over a mobile station from a micro cell to a macro cell covering the same area. The

position of the mobile station may be calculated at the time of a handover, (col. 5 lines 37-50). Its position can be determined by triangulation at one of two places or one of two areas, reading on the claimed "obtaining said respective estimated geographic position of the or each cellular communications device with a radiolocation method," (col. 3 lines 44-46).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine location using triangulation as taught by Innes et al. in the method of Reemtsma, as modified by Wheatley, III et al., in order to control communication in a system with macro and micro cells.

10. **Claims 9 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Reemtsma (Pub # U.S. 2002/0009998 A1)** in view of **Wheatley, III et al. (U.S. Patent # 6,381,230 B1)**, and in further view of **Bloch (U.S. Patent # 6,765,898)**.

Consider **claims 9 and 29**, and **as applied to claims 7 and 27 above**, respectively, Reemtsma, as modified by Wheatley, III et al. clearly shows and discloses the claimed invention except that the location of the subscriber is obtained using radio location technology.

In the same field of endeavor, Bloch clearly shows and discloses a CDMA mobile communications system with macro cells and micro cells. Interference with the reception from mobile stations located within micro cell **C2** and sending with clearly lower transmitting power than mobile station **MS** may occur with

micro cell **C2**, reading on the claimed "tolerable micro cell base station power level is a fraction of the power of signals from the macro cell base station," (fig. 1, abstract, col. 2 lines 33-36).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the power level of mobile stations in the micro cell less than those in the macro cell as taught by Bloch in the method of Reemtsma, as modified by Wheatley, III et al., in order to control interference.

11. **Claims 11 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Reemtsma (Pub # U.S. 2002/0009998 A1)** in view of **Yamashita (U.S. Patent # 6,256,500 B1)**.

Consider **claims 11 and 31**, and **as applied to claims 1 and 21 above**, respectively, Reemtsma clearly shows and discloses the claimed invention except that the time the mobile station is in the micro cell is not determined.

In the same field of endeavor, Yamashita clearly shows and discloses a mobile radio communication system, comprising a macro cell radio base station for forming a macro cell, a micro cell radio base station for forming a micro cell, at least part of the micro cell overlapping with the macro cell, and a mobile station for communicating with the macro cell radio base station when the mobile station is in the macro cell, for receiving a control channel from the macro cell radio base station or the micro cell radio base station, and for determining the

moving speed thereof corresponding to the state of the received control channel when the mobile station is present at a position of which macro cell and the micro cell overlap with each other, reading on the claimed "electronically determining a residence time in said predetermined range for the or each cellular communications device served by the macro cell base station, said residence time being useable to substantially maintain the quality of service of said cellular communications device(s)," (col. 3 lines 6-19).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine the speed of a mobile station as taught by Yamashita in the method of Reemtsma, in order to control communication in a system with macro and micro cells.

12. **Claim 15** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Reemtsma (Pub # U.S. 2002/0009998 A1)** in view of **Kim et al. (Pub # U.S. 2003/0068983 A1)**.

Consider **claim 15**, and **as applied to claim 1**, Reemtsma clearly shows and discloses the claimed invention except that macro cell base station has an adaptive antenna.

In the same field of endeavor, Kim et al. clearly show and disclose a mobile communication apparatus with an antenna array, wherein the apparatus includes a base station with an antenna array a mobile station. Information reflecting time-space channel characteristics for each base station antenna is fed

back to minimize the effects from fading interference and noise, reading on the claimed "serving cellular communications device(s) from said macro cell base station with at least one adaptive antenna capable of directional transmission and/or reception, thereby enabling reduction in the necessary transmission power of said micro cell base station and cellular communications devices served thereby to achieve a given signal quality," (abstract and paragraph 20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have a base station with an antenna array as taught by Kim et al. in the method of Reemtsma, in order to control interference.

13. **Claims 16 and 36** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Reemtsma (Pub # U.S. 2002/0009998 A1)** in view of **Amirijoo et al. (U.S. Patent # 6,728,217 B1)**.

Consider **claim 16**, and **as applied to claim 1**, the combination of Asanuma and Rappaport et al., as modified by Wheatley, III et al., clearly shows and discloses the claimed invention except that data transmission rate is adjusted for stations served by the micro cell base station.

In the same field of endeavor, Amirijoo et al. clearly show and disclose a method for improving quality of data calls within a cellular network by dynamically changing the air interface data rate for transparent and non-transparent services. As the quality of a higher data rate radio link deteriorates below a specified upper

quality threshold due to interference, a change of channel coding to a lower data rate is ordered by the network. If the radio link quality measurements after a specified period of time indicate that the quality level has exceeded a specified lower quality threshold, the data rate is changed back to the higher data rate, reading on the claimed "electronically adjusting the data transmission rate to cellular communications devices served by the micro cell base station," (abstract and col. 2 lines 25-35).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to change the are interface data rate as taught by Amirijoo et al. in the combination of Asanuma and Rappaport et al., as modified by Wheatley, III et al., in order to control interference.

Consider **claim 36**, and **as applied to claim 21**, the combination of Asanuma and Rappaport et al., as modified by Wheatley, III et al., clearly shows and discloses the claimed invention except that data transmission rate is adjusted for stations served by the micro cell base station.

In the same field of endeavor, Amirijoo et al. clearly show and disclose a system for improving quality of data calls within a cellular network by dynamically changing the air interface data rate for transparent and non-transparent services. As the quality of a higher data rate radio link deteriorates below a specified upper quality threshold due to interference, a change of channel coding to a lower data rate is ordered by the network. If the radio link quality measurements after a specified period of time indicate that the quality level has exceeded a specified

lower quality threshold, the data rate is changed back to the higher data rate, reading on the claimed "processor for adjusting the data transmission rate to cellular communication devices served by the micro cell base station," (abstract and col. 2 lines 25-35).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to change the are interface data rate as taught by Amirijoo et al. in the combination of Asanuma and Rappaport et al., as modified by Wheatley, III et al., in order to control interference.

14. **Claim 35** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of **Reemtsma (Pub # U.S. 2002/0009998 A1)** and **Wheatley, III et al. (U.S. Patent # 6,381,230 B1)**, in view of **Yamashita (U.S. Patent # 6,256,500 B1)**, and in further view of **Kim et al. (Pub # U.S. 2003/0068983 A1)**.

Consider **claim 35**, and **as applied to claim 31 above**, the combination of Reemtsma and Wheatley, III et al., as modified by Yamashita, clearly shows and discloses the claimed invention except that macro cell base station has an adaptive antenna.

In the same field of endeavor, Kim et al. clearly show and disclose a mobile communication apparatus with an antenna array, wherein the apparatus includes a base station with an antenna array a mobile station. Information reflecting time-space channel characteristics for each base station antenna is fed

back to minimize the effects from fading interference and noise, reading on the claimed "serving cellular communications device(s) from said macro cell base station with at least one adaptive antenna capable of directional transmission and/or reception, thereby enabling reduction in the necessary transmission power of said micro cell base station and cellular communications devices served thereby to achieve a given signal quality," (abstract and paragraph 20).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have a base station with an antenna array as taught by Kim et al. in the combination of Asanuma and Rappaport et al., as modified by Wheatley, III et al. and Yamashita, in order to control interference.

Allowable Subject Matter

15. **Claims 10, 17-20, 30 and 37-40** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaime M. Holliday whose telephone number is (571) 272-8618. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jaime Holliday
Patent Examiner

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER